

Contraction of roots.—Miss CHURCH¹⁵ has studied the contraction of roots, and while she thinks some of RIMBACH's conclusions were not justified by his facts, she thinks the following can be accepted: "(1) roots do shorten; (2) the parenchymous tissues of the root are the seat of activity; (3) the cork and the vascular trace are passive; (4) the cork is ultimately crushed; (5) there is a region where one can see wrinkling and measure shortening, a second region where no wrinklins are visible yet one can measure shortening, and an unchanged region (RIMBACH); in dicotyledons the trace becomes visibly curved inward and outward in a wavy fashion, while in monocotyledons the vascular bundles remain practically straight (DEVRIES)." —WM. CROCKER.

Energy of biological processes.—LINHART¹⁶, in a preliminary paper, has called attention to the almost neglected field of study of the energy relations in biological processes. By employing similar methods to those recently used in attempts to base chemical reactions on thermodynamic principles, LINHART hopes to be able to measure the energy values of various biological processes. The heats of combustion of the nutrient materials must be known. With these data, and the entropies of the substances involved, it is possible by thermodynamic equations to compute the free energy from a reaction. The energy available to *Azotobacter* grown on mannite was thus calculated. The amount of NH_3 fixed by *Azotobacter* in consuming a certain amount of mannite was found to represent only about 1 per cent of the energy value of the mannite.—J. R. MAGNESS.

Heat treatment of seeds.—ATANASOFF and JOHNSON¹⁷ give a preliminary report of their work on heating cereal seeds as a means of killing seed-carried parasites. They emphasize the necessity of applying this method only to high quality, well dried seeds. They could thus dispose of bacterial blight of barley and of oats. The wheat scab (*Gibberella soubinetii* and *Fusarium* spp.), primary infections only, and spot blotch of barley (*Helminthosporium sativum*) are practically eliminated by dry heat treatment. The *Helminthosporium* blotch of oats, as well as loose smut of barley and smuts of oats, were markedly reduced by such treatment. In all of these cases, of course, the germination was not materially injured.—WM. CROCKER.

Soil moisture.—KEEN¹⁸ gives an excellent discussion of the latest literature on the mechanics of soil moisture.—WM. CROCKER.

¹⁵ CHURCH, MARGARET B., Root contraction. *Plant World* 22:337-340. 1919.

¹⁶ LINHART, G. A., The free energy of biological processes. *Jour. Gen. Physiology*. V. 2:247-251. 1920.

¹⁷ ATANASOFF, D., and JOHNSON, A. G., Treatment of cereal seeds by dry heat. *Jour. Agric. Res.* 18:379-390. 1920.

¹⁸ KEEN, B. A., The relation existing between the soil and its water content. *Jour. Agric. Sci.* 10:44-71. 1919.